

## On two new races of the genus *Zygaena* Fabricius from Asia Minor (Lep. Zygaenidae)\*

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### 1. *Zygaena* (*Agrumenia*) *formosa* Herrich-Schäffer ssp. **bernhaueriana** n. ssp.

*Zygaena formosa* H.-S. (1852; 1851. figure) is illustrated in Seitz, *Die Gross-Schmetterlinge der Erde* 2 (1907) and is dealt with further by H. Reiss in the Supplement to the work of Seitz (1930) 2:22 and (1933) 2:269. H. Reiss (1935), in describing the ssp. *kotzschii* Reiss from Khash Khash Dag, Aghri Dag, 3,200 m, West Armenia, quoted the original description of *Zygaena formosa* Herrich-Schäffer from Amasia, Pontus; there the date of the original description is erroneously cited as 1845, which should be corrected to 1852. The ssp. *malatiana* Rebel (1901) from Malatia, Taurus was also dealt with by H. Reiss (1935). Haaf (1952) figured the male genitalia while those of both sexes were figured by Alberti (1958; 1959). We do not possess specimens of ssp. *hadjinica* Holik & Sheljuzhko (1958) (= *hadjinensis* Holik & Sheljuzhko (1956)) from Hadjin, Taurus; it was described from 6♂♂, leg. Manissadjan, 1886, in coll. Staudinger, as follows: "These examples approach the west Armenian subspecies but differ in the red coloration which is more inclined to carmine. Quite characteristic is the basal half of the hindwings which is more thickly scaled than the apical half. The hindwing border is better developed than that in the nominate race and in specimens from Malatia. The abdominal belt is simple, partly reduced." Tremewan (1970) described the ssp. *eximia* from Ankara: Balâ, south of Ankara, ca 1000 m, 13♂♂, 4 ♀♀, 11-13.7.1969, and from Ankara: Beynam, south of Ankara, ca 1000 m, 3♂♂, 12-16.7.1969, leg. Tremewan and Cottrill. Wingspan ♂ 22-26 mm, ♀ 24-27 mm. We have for comparison 2♂♂ 1♀ of the type series. Further, 1♂ 1♀ of *eximia* from Beynam, 14.7.1971, leg. K. Bernhauer, in coll. H. Reiss.

From eastern Turkey, north of Tunceli, ca 25 km south of Pulümür, 1500m, 25-29.6.1971, leg. D. & K. Bernhauer, we have 6♂♂ that differ from all known subspecies. We name this race after the collectors: **bernhaueriana** n. ssp. Wingspan ♂♂ 25-26 mm. Compared with *eximia* Tremewan the patagia is more whitish. The whitish surrounding of the tegulae is hardly evident. The abdominal belt, which in *eximia* is distinct light carmine red on two segments, is in all specimens strongly restricted and dusted with dark scaling; in 4♂♂ the abdominal belt is quite lost on the upperside and on the underside it is in the form of only a very narrow red band. Compared with *eximia*, the legs are distinctly darkened. The red of the fore-

\*The systematic arrangement follows Reiss & Tremewan (1967).



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- Fig. 1. *Zygaena formosa kotzschii* Reiss, Holotype ♂, wingspan 26 mm.  
 Fig. 2. *Z. formosa bernhaueriana* n. ssp., Holotype ♂, wingspan 25 mm.  
 Fig. 3. *Z. formosa bernhaueriana* n. ssp., Paratype ♂, wingspan 25 mm.  
 Fig. 4. *Z. formosa bernhaueriana* n. ssp., Paratype ♂, wingspan 26 mm.  
 Fig. 5. *Z. osterodensis ikizderica* n. ssp. Holotype ♂, wingspan 31 mm.  
 Fig. 6. *Z. osterodensis ikizderica* n. ssp., Allotype ♀, wingspan 32 mm.  
 Fig. 7. *Z. osterodensis ikizderica* n. ssp., Paratype ♂, wingspan 34 mm.  
 Fig. 8. *Z. osterodensis ikizderica* n. ssp., Paratype ♀, wingspan 32 mm.

wing spots and the hindwings is a warm light carmine, hardly different from that of *eximia*. The yellowish white edging of the forewing spots is distinctly narrower, compared with *eximia*; in 2♂♂ it runs along the costa from spot 1 to 3. A light carmine red spot 2a is found in 5♂♂, and in 1♂ the spot 2a is yellowish. This spot (2a) is placed against the dorsum through the yellowish white line, as in *eximia*. The underside is similar to the upperside. Holotype ♂, wingspan 25 mm, and 5 paratypes ♂♂ in coll. Reiss.

The figures show the form and size of the antennae, the wing shape, the spot size and edging, likewise the hindwing border.

*Zygaena formosa* ssp. *bernhaueriana* n. ssp. is different:

(a) from *formosa formosa* H.-S. from Amasia through the darker legs, the strongly reduced red abdominal belt, the less marked white edging of the tegulae and the narrower edging of the forewing spots;

(b) from *formosa hadjinensis* Holik & Sheljuzhko from Hadjin, Taurus, and *malatiana* Rebel from Malatia, Taurus, through the darker legs, the reduced abdominal belt and the somewhat colder red coloration;

(c) from *formosa kotzschii* Reiss from Khash Khash Dag, Aghri Dag, 3200 m, of which the holotype ♂ is figured, through the light blue sheen on the forewings, the more whitish appearance of the tegulae, the warmer carmine red spots with well represented, not rudimentary, edging; further by the enlarged spots 3 and 4 which are not separated by the dark ground colour.

## 2. *Zygaena* (*Zygaena*) *osterodensis* Reiss ssp. *ikizderica* n. ssp.

Following the genitalia studies by Tremewan & Reiss (1964), the distribution of *Zygaena osterodensis* Reiss (*scabiosae* auct.) was shown on a map which also shows the distribution of *Zygaena romeo* Duponchel and *Zygaena nevadensis* Rambur. *Z. scabiosae* Scheven is a race of *Zygaena purpuralis* Brünnich from Regensburg, Germany. From Achalzich, Adshara Mountains, Georgia, Transcaucasus, ssp. *caucasi* Burgeff (1926) (= *caucasica* Spuler (1906), locality Caucasus) was described. Whether the original series of *caucasica* Spuler actually belong to *osterodensis* Reiss or to *Zygaena mana* Kirby (= *erebus* Staudinger) can no longer be ascertained, as the types cannot be found. H. Reiss (1930) dealt with ssp. *caucasi* Burgeff in Seitz, *Die Gross-Schmetterlinge der Erde*, Supplement 2:10 under *scabiosae* and figured a ♂ ex coll. Burgeff on plate 4n. Holik & Sheljuzhko (1955) give under *scabiosae* a description of *caucasi* from 17 ♂♂, 3 ♀♀ without collecting data from the neighbourhood of Borshom, Georgia: "As large as central European specimens but with broad very rounded apexes of the wings. The pattern is almost identical with that of the German races. The inclination towards broken streaks is only



small (1♂). The hindwing border is evenly broad. The scaling is fairly dense, the red a dull carmine. Antennae thick, with strong rounded clubs." In addition Holik & Sheljuzhko (1955) wrote that these specimens were not different from those that Burgeff described from Achalzich. The thickened antennae that both authors described could not be confirmed by us.

In coll. Reiss is 1♂ labelled Caucasus, that belongs to ssp. *caucasi* Burgeff. Wingspan 29 mm. The thorax and abdomen show no visible hairs. The antennae are thin and weakly clubbed. The wings are rounded at the apexes. The black ground colour is without gloss. The light carmine red streaks are separated from one another by the black veins. The carmine red coloration of the hindwings is scarcely luminous. The hindwing border is broad and fairly even to the tornus.

From a locality about 20 km south of Ikisdere, south of Rize in north-east Turkey, 1900 m, we have 15♂♂, 2♀♀, 6-10.7.1971, leg. D. & K. Bernhauer and 1♂, 1♀, end of July, 1971, leg. Schubert, that we name after the locality ssp. *ikizderica* n. ssp. Holotype ♂, wingspan 31 mm, allotype ♀, wingspan 32 mm, and paratypes in coll. Reiss.

Wingspan 1♂ 29 mm, 7♂♂ 31 mm, 5♂♂ 32 mm, 1♂ 33 mm, 1♂ 34 mm, 1♂ (crippled); 1♀ 30 mm, 2♀♀ 32 mm. The ground colour of the antennae, head, thorax and abdomen is black with a light blue gloss; the abdomen is distinctly haired. The antennae in the ♂♂ are distinctly more strongly clubbed than those of the ♀♀. The legs are black with bluish gloss; the hind legs lack the medial spurs. The dull ground colour of the forewings is almost without gloss. The dark hindwing border is broad, strongest at the apex and reaching the tornus. The fringes are black, darker than the ground colour. The forewings are rounded at the apex. The red of the forewing streaks and of the hindwings is darker in the males than in the females. The streaks of the forewings are similar in shape and size to those of central European *osterodensis*. Streak 1 extends along the wing as far as spot 3, but remains separated from both spots 2 and 3 by the dark veins. The streak comprised of spots 2-4 is often somewhat narrower in the middle and remains separated from the streak comprised of spots 3-5 by the dark ground colour. The apical streak (spots 3-5) has the elongate spot 3 connected to spot 5 in almost all specimens. In 3♂♂, 2♀♀ the apical streak (3-5) is completely broken by the dark ground colour. The underside of the wings is as the upperside, the streaks are sometimes somewhat diffuse.

The genitalia of 1♂ were prepared by Mr Fr. Heller of the Museum of Natural History in Stuttgart, and agree with the genitalia illustrated by Alberti (1958; 1959) under *scabiosae*. We are most grateful to Mr Heller for his work.

The illustrations show especially the size of the wings and antennae, the forewing streaks and the breadth of the hindwing border.

The new subspecies differs from ssp. *caucasi* Burgeff from Achalzich in Georgia in the larger wingspan, stronger pubescence of the thorax and abdomen and the forewing streaks.

Holik & Sheljuzhko (1955) record under *scabiosae* 1♂ 1♀ from Sarykamys (formerly Province Kars), 17.6.1913, leg. Tkatschukov (coll. Sheljuzhko) for the West Armenian zone of the Asia Minor region.

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